

# **INTEGRATING TEST & EVALUATION INTO THE SBA PROCESS**

## **3rd Simulation Based Acquisition Conference**

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**Dr. Leonidas Sakell**  
**OSD/DOT&E/LFT&E Action Officer**

**Office of the Secretary of Defense  
OSD/DOT&E  
1700 Defense Pentagon, Room 1C742  
Washington, DC 20301-1700  
v: (703) 614-3991    f: (703) 697-1404  
LSakell@dote.osd.mil**



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# SBA MYTHS

- SBA MEANS SMALL BUSINESS ADMINISTRATION
- SBA WILL ELIMINATE TESTING
- SBA IS AN ACQUISITION PROCESS UNTO ITSELF THAT WILL CURE ALL THE ILLS OF ACQUISITION



## **SBA MYTHS (Cont'd)**

- THE BOEING 777 IS A PERFECT EXAMPLE OF SBA REPLACING TESTING

*“IF ONE WISHES TO USE THE RDT&E PROGRAM OF THE **BOEING 777** AS AN EXAMPLE OF HOW TO DEVELOP A SUCCESSFUL SYSTEM, TAKE NOTE OF THE FACT THAT **OVER A PERIOD OF 11 MONTHS, THEY COMPLETED 751 FLIGHT HOURS IN FLUTTER, 730 GROUND HOURS IN AERO PERFORMANCE, 1088 FLIGHT HOURS IN PROPULSION DEVELOPMENT AND CERTIFICATION, 770 HOURS IN AERO STABILITY, 830 GROUND HOURS IN AERO DEVELOPMENT, 1280 FLIGHT HOURS IN ETOPS, 724 GROUND SERVICE READY HOURS, 278 FLIGHT HOURS IN AVIONICS CERTIFICATION AND 913 GROUND HOURS IN SYSTEMS CERTIFICATION, THAT’S 8,384 TEST HOURS, MORE THAN ANY OTHER AIRCRAFT IN HISTORY.***

*(JERRY ZANATA, BOEING COMMERCIAL AIRPLANE COMPANY PRESENTATION TO DSB ON T&E, SEPTEMBER 16, 1998)*



# WHAT IS THE SBA PROCESS?

- M&S INTEGRATED THROUGH ALL PHASES OF ACQUISITION?

OR IS IT

- ACQUISITION THAT MERELY EMPLOYS M&S AT DISCRETE POINTS IN ACQUISITION?

***“SIMPLY USING MODELS AND SIMULATIONS  
DOES NOT EQUATE TO SBA.”***

***(JTCG/AS M&S CONFERENCE, RENO, NV, FEBRUARY 2001)***



# **SBA: ACCEPTED VERSUS DIRECTED**

***“REAL PROGRESS IN M&S WILL BE DETERMINED BY DEMONSTRATED BENEFITS, NOT POLICY, DIRECTIVES OR RHETORIC”***

***(COL FORREST CRANE, DIRECTOR DMSO AT JTCG/AS M&S CONFERENCE, RENO, NV, FEBRUARY, 2001)***

***“THE BIGGEST HURDLE IN ACHIEVING SIMULATION-BASED ACQUISITION (SBA) IS GETTING PEOPLE TO PAY FOR THE MODELING AND SIMULATION. NO ONE WANTS TO PAY FOR SOMETHING THAT BENEFITS MANY. AND WHEN RESOURCES ARE LIMITED, THE GENERIC WORK GETS LOWER PRIORITY.”***

***(JACQUES GANSLER, USD(A&T) QUOTED BY MARK SCHAFFER, NATIONAL DEFENSE MAGAZINE, SEPTEMBER 1998, P 39)***



# **SBA VERSUS SSA**

- NO, I DON'T MEAN THE SOCIAL SECURITY ADMINISTRATION
- NO, I DON'T MEAN SIMULATION-BASED ACQUISITION
- YES, I DO MEAN SIMULATION-SUPPORTED ACQUISITION



# **T&E PROCESS CHANGES: M&S**

- M&S CAN BE USED TO SUPPORT DT&E, OT&E AND LFT&E FOR:
  - SYSTEM CONCEPT DEVELOPMENT
  - TEST DESIGN
  - PRETEST PREDICTIONS
  - OTHER APPLICATIONS





# **T&E PROCESS CHANGES: M&S (Cont'd)**

- INCLUDE SYSTEM-LEVEL T&E IN THE CONTEXT OF THE SYSTEM'S OVERALL FORCE ENGAGEMENT EFFECTIVENESS?
- IF SO, THEN DEPENDING ON THE SYSTEM, CONSIDER THE APPROPRIATE SYSTEM-OF-SYSTEMS EFFECTIVENESS CRITERIA;
  - CAMPAIGN LEVEL EFFECTIVENESS
  - THEATER LEVEL EFFECTIVENESS
  - TACTICAL LEVEL EFFECTIVENESS



# T&E IMPACT ON M&S

- M&S CAPTURES WHAT YOU KNOW
- T&E CAPTURES WHAT YOU KNOW AND WHAT YOU DON'T KNOW
  - “UNKNOWN-UNKNOWN” (Mr. J. O'Bryon)

***“MAJOR PROBLEMS DISCOVERED IN TESTING WOULD NEVER HAVE BEEN DISCOVERED IN M&S. IF WE WERE SMART ENOUGH TO PUT IT IN THE MODEL, WE WOULD HAVE BEEN SMART ENOUGH TO PUT IT IN THE SYSTEM.”***

***(Dr. MARION WILLIAMS, JTCG/AS M&S CONFERENCE, RENO, NV, FEBRUARY 2001)***



## **T&E IMPACT ON M&S (Cont'd)**

- T&E provides unique data for M&S development and improvement required for application:
  - Integrated system data
  - System, subsystem, and component level combat damage data
  - Realistic combat mission scenarios



# M&S IMPACT ON T&E

- M&S tools developed/improved through SBA initiatives can be used for acquisition program T&E to:
  - better understand test results
  - understand/predict test outcomes
  - supplant testing when testing is not possible (i.e. environmental constraints, safety concerns, treaty compliance)
- Integrated system-level M&S tools can reduce DT&E, OT&E and LFT&E requirements by providing realistic scenarios for candidate system evaluation



# **M&S ATTRIBUTES NEEDED TO SUPPORT T&E**

- SYSTEM-LEVEL
- PHYSICS-BASED TECHNOLOGY ASSESSMENTS RATHER THAN FUNDAMENTAL SCIENCE ALONE i.e.
  - WEAPONS RELEASE
  - END-GAME TARGETING
- BATTLE DAMAGE ASSESSMENTS (BDA)
- LETHALITY PREDICTIONS
- SURVIVABILITY PREDICTIONS

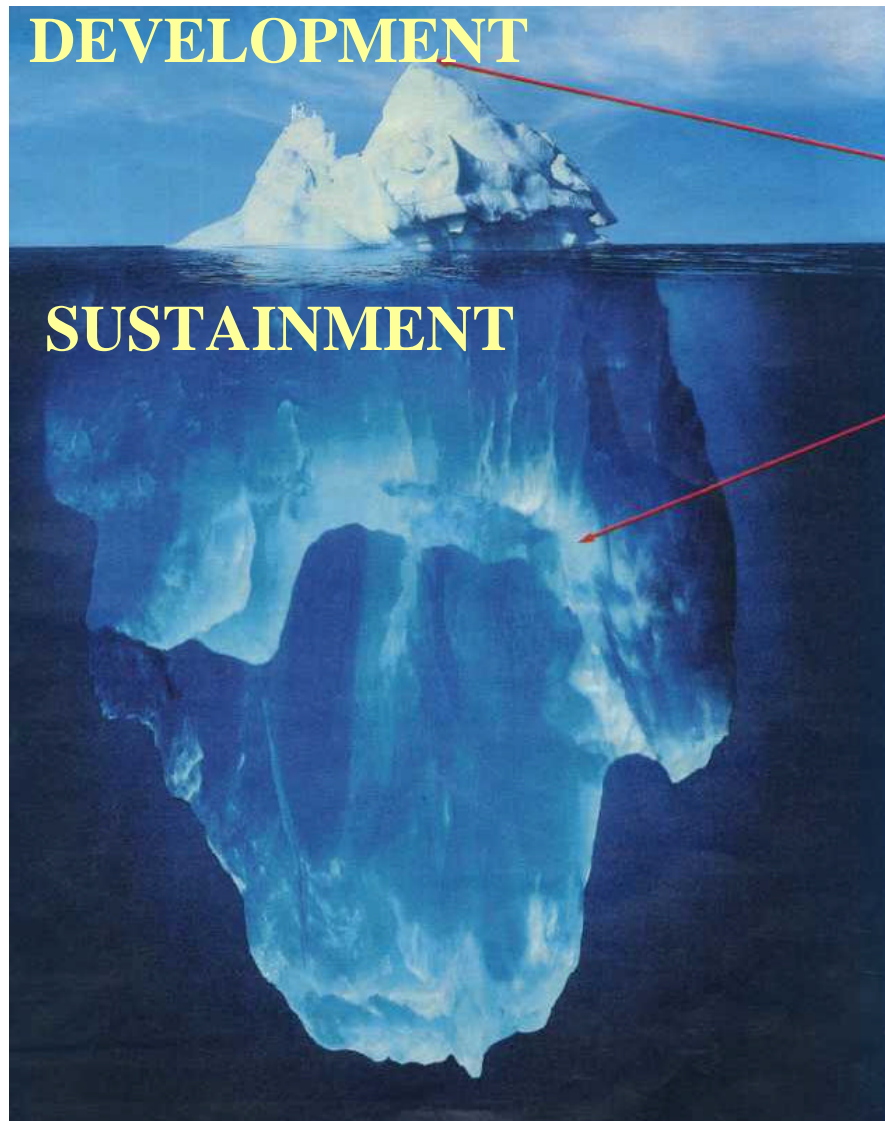


# **DOT&E SUPPORT OF SBA**

- SPONSORED M&S SURVEY OF ACQUISITION PROGRAMS
- INITIATED M&S PILOT PROGRAMS WITH SERVICES
- FORMED AND CHAIR (DDOT&E/LFT&E) M&S BRIDGE GROUP
- INCORPORATED USD(AT&L) RECOMMENDATIONS TO DoD 5000.2R INTERIM
- SPONSORED M&S CONFERENCE AT RENO, NEVADA
- MADE NUMEROUS M&S ADVOCACY BRIEFINGS



# **SBA and M&S: Hidden Costs**



**A “TITANIC” CHALLENGE !!!**



# **Integrating T&E into SBA**

## **M&S WORK TO BE DONE:**

### **A PARTIAL LIST**

- **IMPLEMENT THOSE DoD DIRECTIVES RELATING TO M&S ALREADY ON THE BOOKS**
- 2. ORGANIZE AN M&S MANAGEMENT ENTERPRISE (E.G. CONSORTIUM) WITHIN DoD TO DIRECTLY SUPPORT THE PM – ACQUISITION COMMUNITY ACROSS THE BOARD WITH DMSO IN THE LEAD WITH ADEQUATE RESOURCES.**
- 3. GAIN EARLY SUBSTANTIAL FUNDING FROM PROGRAM MANAGERS TO INVEST IN M&S ENTERPRISE EITHER BY MANDATE OR BY MAJOR REVISION IN PM INCENTIVE STRUCTURE.**
- 4. RECONCILE THE CURRENT DICHOTOMY IN MODELING IN SUPPORT OF THE TRAINING/ READINESS COMMUNITY VS. THE MODELING IN SUPPORT OF MATERIEL ACQUISITION COMMUNITY.**
- 5. MAKE M&S PART OF THE DELIVERABLES FOR EACH ACQUISITION PROGRAM**





# **Integrating T&E into SBA**

## **PROCESS CHANGES**

- **ESTABLISH FORMAL SBA PROCESS**
  - M&S Needs Process
  - M&S Development Rqmts Process
- **ESTABLISH T&E CONNECTIVITY TO THOSE PROCESSES AND USE T&E DATA FOR SBA M&S DEVELOPMENT**
  - Modeling “unknown unknowns” revealed through testing
  - On-going M&S Validation using test data
- **IMPROVE T&E CONNECTIVITY WITH CURRENT AND FUTURE DEPARTMENT HPC & HLA COMPUTING INITIATIVES**
  - JMASS, JWARS, JSIMS, Etc.



# **Integrating T&E Into SBA**

## **COORDINATING EFFORTS**

- ESTABLISH T&E DIALOGUE NOW  
AND COORDINATE EFFORTS AMONG  
PLAYERS:
  - DDR&E
  - DMSO
  - HPCMO
  - SERVICES
  - PROGRAMS



# **Integrating T&E into SBA: CALL TO ACTION**

**THE M&S / T&E / ACQUISITION  
COMMUNITY MUST IMPLEMENT  
CHANGE, NOT SIMPLY STUDY,  
REVIEW, RECOMMEND AND  
REPORT ON IT! (MR. JAMES O'BRYON)**

“NOTHING IS MORE DIFFICULT THAN  
TO INTRODUCE A NEW ORDER  
BECAUSE THE INNOVATOR HAS FOR  
ENEMIES ALL THOSE WHO HAVE  
DONE WELL UNDER THE OLD  
CONDITIONS AND LUKEWARM  
DEFENDERS IN THOSE WHO MAY DO  
WELL UNDER THE NEW.”



NICOLAI MACHIAVELLI, 1513 A.D.



# IN CONCLUSION . . .

- **INCENTIVIZE PMs NOW !!!**
- **FUND NOW !!!**
- **ACT NOW !!!**

